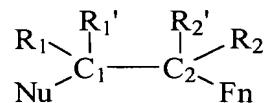


48. (New) A universal solid support for the solid phase synthesis of polynucleotides under a first set of reaction conditions which comprises an organic or inorganic polymer coupled to a compound of the formula:



wherein

Fn is an unprotected or protected hydroxyl group containing an oxygen atom which when unprotected is capable of bonding to the 3' or 5' phosphate, phosphite, or phosphorothioate group of a nucleotide under the first set of reaction conditions;

Nu is an unprotected or protected nucleophile which when unprotected is capable of cleaving the 3' or 5' phosphate, phosphite, or phosphorothioate group from a nucleotide bound to C₂ via an oxygen atom under a second set of reaction conditions;

each of R₁ and R₂ is independently an atom or chemical moiety inert to solid phase reaction conditions or when taken together form a ring inert to solid phase reaction conditions; and

one of R₁' and R₂' is the organic or inorganic polymer, or is an atom or chemical moiety inert to solid phase reaction conditions coupled to the organic or inorganic polymer, and the other of R₁' and R₂' is an atom or chemical moiety inert to solid phase reaction conditions; or

R₁' and R₂' taken together form a ring inert to solid phase reaction conditions and coupled to the organic or inorganic polymer.

49. (New) The universal solid support of claim 48 wherein Fn is an unprotected hydroxyl group.

50. (New) The universal solid support of claim 48 wherein Nu is selected from the group consisting of: -NH₂, halogen, -OAlkyl, -SAlkyl, -NHAalkyl, -NHAcyl, -OAcyl, -SAcyl, and -N(Alkyl)₂, wherein Alkyl represents alkyl or halogenated alkyl and Acyl represents acyl or halogenated acyl.

51. (New) The universal solid support of claim 50 wherein Alkyl is selected from the group consisting of methyl, ethyl, n-propyl, iso-propyl, n-butyl, iso-butyl, tert-butyl, and halogenated derivatives thereof.

~~52.~~ (New) The universal solid support of claim 48 wherein R₁' is the organic or inorganic polymer.

53. (New) The universal solid support of claim 48 wherein R₁' is an atom or chemical moiety inert to solid phase reaction conditions coupled to the organic or inorganic polymer.

54. (New) The universal solid support of claim 48 wherein R₂' is the organic or inorganic polymer.

55. (New) The universal solid support of claim 48 wherein R₂' is an atom or chemical moiety inert to solid phase reaction conditions coupled to the organic or inorganic polymer.

56. (New) The universal solid support of claim 52, 53, 54, or 55 wherein C₁, C₂, R₁, and R₂ form a heterocycle inert to solid phase reaction conditions.

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57. (New) The universal solid support of claim 52 or 53 wherein each of R₁, R₂, and R₂' is independently selected from the group consisting of H, alkyl, and halogenated derivatives of alkyl.

58. (New) The universal solid support of claim 54 or 55 wherein each of R₁, R₁', and R₂ is independently selected from the group consisting of H, alkyl, and halogenated derivatives of alkyl.

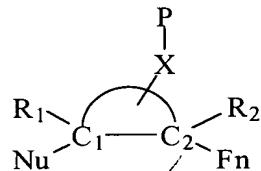
59. (New) The universal solid support of claim 48 wherein C₁, C₂, R₁', and R₂' form a heterocycle inert to solid phase reaction conditions and coupled to the organic or inorganic polymer.

60. (New) The universal solid support of claim 59 wherein said heterocycle is a ribose ring and Nu is the 2'-O function of said ribose ring protected with a protecting group.

61. (New) The universal solid support of claim 60 wherein Nu protected with a protecting group is -OC(O)CH₃.

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62. (New) The universal solid support of claim 59 wherein each of R₁ and R₂ is independently selected from the group consisting of H, alkyl, and halogenated derivatives of alkyl.

63. (New) A universal solid support comprising a cyclic compound of the formula:



wherein

each of R₁ and R₂ is independently an atom or chemical moiety inert to solid phase reaction conditions;

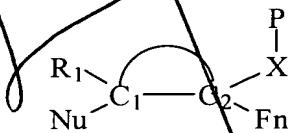
Fn is an unprotected or protected hydroxyl group;

Nu is an unprotected or protected nucleophile;

X, which may or may not be present, is a substituted or unsubstituted alkyl group; and

P is an organic or inorganic polymer.

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64. (New) A universal solid support comprising a cyclic compound of the formula:



wherein

R₁ is an atom or chemical moiety inert to solid phase reaction conditions;

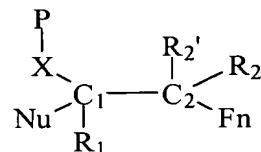
Fn is an unprotected or protected hydroxyl group;

Nu is an unprotected or protected nucleophile;

X, which may or may not be present, is a substituted or unsubstituted alkyl group; and

P is an organic or inorganic polymer.

65. (New) A universal solid support comprising a compound of the formula:



wherein

each of R₁, R₂, and R₂' is independently an atom or chemical moiety inert to solid phase reaction conditions;

Fn is an unprotected or protected hydroxyl group;

Nu is an unprotected or protected nucleophile;

X, which may or may not be present, is a substituted or unsubstituted alkyl group; and

P is an organic or inorganic polymer.

66. (New) The universal solid support of claim 63, 64, or 65 wherein Fn is an unprotected hydroxyl group.

67. (New) The universal solid support of claim 63, 64, or 65 wherein Nu is selected from the group consisting of: -NH₂, halogen, -OAlkyl, -SAlkyl, -NHAlkyl, -NHAcyL, -OAcyl, -SAcyl, and -N(Alkyl)₂, wherein Alkyl represents alkyl optionally substituted with one or more halogen atoms and Acyl represents acyl optionally substituted with one or more halogen atoms.

68. (New) The universal solid support of claim 67 wherein Alkyl is selected from the group consisting of methyl, ethyl, n-propyl, iso-propyl, n-butyl, iso-butyl, tert-butyl, and halogenated derivatives thereof.

69. (New) The universal solid support of claim 63, 64, or 65 wherein Nu is of the formula -OC(O)Y, wherein Y is selected from the group consisting of: -NH₂, halogen, -OAlkyl, -SAlkyl, -NHAlkyl, -NHAcyL, -OAcyl, -SAcyl, and -N(Alkyl)₂, wherein Alkyl represents alkyl optionally substituted with one or more halogen atoms and Acyl represents acyl optionally substituted with one or more halogen atoms.

70. (New) The universal solid support of claim 69 wherein Alkyl is selected from the group consisting of methyl, ethyl, n-propyl, iso-propyl, n-butyl, iso-butyl, tert-butyl, and halogenated derivatives thereof.

71. (New) The universal solid support of claim 63 or 64 wherein C₁ and C₂ form part of a ribose ring and Nu is the 2'-O function of said ribose ring protected with a protecting group.

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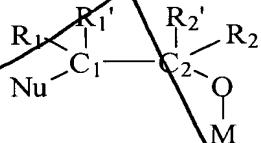
72. (New) The universal solid support of claim 71 wherein Nu protected with a protecting group is -OC(O)CH₃.

73. (New) The universal solid support of claim 63 wherein each of R₁ and R₂ is independently selected from the group consisting of H, alkyl, and halogenated derivatives of alkyl.

74. (New) The universal solid support of claim 64 wherein R₁ is selected from the group consisting of H, alkyl, and halogenated derivatives of alkyl.

75. (New) The universal solid support of claim 65 wherein each of R₁, R₂, and R₂' is independently selected from the group consisting of H, alkyl, and halogenated derivatives of alkyl.

76. (New) A universal solid support for the solid phase synthesis of polynucleotides which comprises an organic or inorganic polymer coupled to a compound of the formula:



wherein

M is at least one nucleotide and is bound to the oxygen atom via a 3' or 5' phosphate, phosphite, or phosphorothioate group;

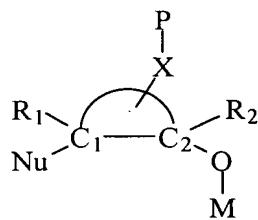
Nu is an unprotected or protected nucleophile which when unprotected is capable of cleaving the 3' or 5' phosphate, phosphite, or phosphorothioate group from M;

each of R₁ and R₂ is independently an atom or chemical moiety inert to solid phase reaction conditions or when taken together form a ring inert to solid phase reaction conditions; and

one of R₁' and R₂' is the organic or inorganic polymer, or is an atom or chemical moiety inert to solid phase reaction conditions coupled to the organic or inorganic polymer, and the other of R₁' and R₂' is an atom or chemical moiety inert to solid phase reaction conditions; or

R₁' and R₂' taken together form a ring inert to solid phase reaction conditions and coupled to the organic or inorganic polymer.

77. (New) A universal solid support comprising a cyclic compound of the formula:



wherein

each of R_1 and R_2 is independently an atom or chemical moiety inert to solid phase reaction conditions;

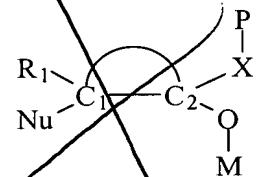
Nu is an unprotected or protected nucleophile;

X , which may or may not be present, is a substituted or unsubstituted alkyl group;

P is an organic or inorganic polymer; and

M is at least one nucleotide.

78. (New) A universal solid support comprising a cyclic compound of the formula:



wherein

R_1 is an atom or chemical moiety inert to solid phase reaction conditions;

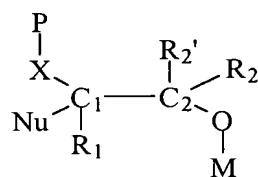
Nu is an unprotected or protected nucleophile;

X , which may or may not be present, is a substituted or unsubstituted alkyl group;

P is an organic or inorganic polymer; and

M is at least one nucleotide.

79. (New) A universal solid support comprising a compound of the formula:



wherein

each of R_1 , R_2 , and R_2' is independently an atom or chemical moiety inert to solid phase reaction conditions;

Nu is an unprotected or protected nucleophile;